

Virtual Laboratories Everywhere

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Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B99-029

RFW#: 9903L585 **SDG#**: H0371

SAF#: B99-029

W.O. #: 10985-001-001-9999-00 Date Received: 03-30-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 solid samples.

 The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

- 3. Sample holding times as required by the method and/or contract were met.
- 4. The cooler temperature was recorded on the chain-of-custody.
- 5. The method blank for Nitrate was within method criteria.
- 6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.
- 7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
- 8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

J. Michael Taylor

Vice President

Philadelphia Analytical Laboratory

njp\i03-585

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

001

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

,	<u>ASTM</u>	SW846	<u>OTHER</u>
%Ash	D2216-80		
%Moisture	D2216-80		_ ILMO4.0 (e)
%Solids	-		✓ ILMO4.0 (e)
%Volatile Solids	D2216-80		
ASTM Extraction in Water	D3987-81/85		
BTU	D240-87		
CEC		9081	_ c
Corrosivity _by coupon _by pH		1110 (mod) 9045	
Cyanide, Total		9010	_ ILMO4.0 (e)
Cyanide, Reactive		_ Sec 7.3	
Density			_ b
Halides, Extractable Organic			_ EPA 600/4/84-008 (mod)
Halides, Total			_ EPA 600/4/84-008 (mod)
EP-Toxicity		_ 1310A	
Flash Point		1010	
Ignitability		1010	
Carbon, Total Organic (by LOI)			_ c
Oil and Grease		9071A	•
Carbon, Total Organic		9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	D240-87 (mod)	5050	
Petroleum Hydrocarbons, Total R	ecoverable	9071	_ EPA 418.1 (mod)
pH, Soil		9045B	
Sulfide, Reactive		_ Sec 7.3	
Specific Gravity	D1429-76C		
Sulfur, Total		_ ⁹⁰⁵⁶	
TCLP		1311	
TCLV		1311	
Synthetic Precipitation Leach		1312	
Chlorine, Total		_ 9056	
Paint Filter		9095	
Other: Vitrate	Method: <i>E[</i>	PA 300.0	_

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

- ASTM Standard Methods.
- 2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
- 3. <u>Test Methods for Evaluating Solid Waste</u> (USEPA SW-846).
- a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
- b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
- c. <u>Method of Soil Analysis</u>, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
- d. <u>Method of Soil Analysis</u>, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

RFW 21-21L-034/D-06/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/03/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9903L585

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
******		*******	******	*****	********	******
-001	BOV3K2	% Solids	42.7	•	0.01	1.0
		Nitrate by IC	9.3	MG/KG	2.9	1.0
-002	BOV3K4	% Solide	43.0	*	0.01	1.0
		Nitrate by IC	49	MG/KG	2.9	1.0
-003	BOV3K6	% Solids	43.0	*	0.01	1.0
		Nitrate by IC	11	MG/KG	2.9	1.0
-004	BOV3K8	% Solids	42.8		0.01	1.0
		Nitrata by TC		MG/KG	2.9	1.0

Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B99-029

DATE RECEIVED: 03/30/99 RFW LOT # :9903L585

BOV3K2 \$ SOLIDS	
% SOLIDS 001 SO 99L%S047 03/24/99 03/31 NITRATE BY IC 001 SO 99LXC049 03/24/99 04/30 NITRATE BY IC 001 REP SO 99LXC049 03/24/99 04/30	
NITRATE BY IC 001 SO 99LXC049 03/24/99 04/30 NITRATE BY IC 001 REP SO 99LXC049 03/24/99 04/30	
NITRATE BY IC 001 SO 99LXC049 03/24/99 04/30 NITRATE BY IC 001 REP SO 99LXC049 03/24/99 04/30	100 04/20/00
NITER BY TO 001 MC CO 001 YC049 $\frac{03}{24}$ \ \ \ \ 04 \ \ 30	
TCLP 001 SO 99LTO035 03/24/99 03/31	/99 04/01/99
B0V3K4	
% SOLIDS 002 SO 99L%S047 03/24/99 03/31	/99 04/01/99
% SOLIDS 002 REP SO 99L%S047 03/24/99 03/31	
NITRATE BY IC 002 SO 99LXC049 03/24/99 04/30	/99 04/30/99
TCLP 002 SO 99LT0035 03/24/99 03/31	/99 04/01/99
B0V3K6	•
% SOLIDS 003 SO 99L%S047 03/24/99 03/31	/99 04/01/99
NITRATE BY IC 003 SO 99LXC049 03/24/99 04/30	/99 04/30/99
TCLP 003 SO 99LT0035 03/24/99 03/31	/99 04/01/99
B0V3K8	
% SOLIDS 004 SO 99L%S047 03/24/99 03/31	./99 04/01/99
NITRATE BY IC 004 SO 99LXC049 03/24/99 04/30	
TCLP 004 SO 99LT0035 03/24/99 03/31	./99 04/01/99
LAB QC:	
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	•
NITRATE BY IC MB1 S 99LXC049 N/A 04/30	04/30/99
NITRATE BY IC MB1 BS S 99LXC049 N/A 04/30	

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request Page Lof L

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



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RECRA Proje	et Man	ager <u> </u>	<u> </u>			0. 1					Solid	<u> </u>		<u> </u>	<u> </u>	 	 - 			 	350	500				-
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SE - Sediment SO - Solid	<u> </u>								l]	Ì						1	1/2		3	2			. 1	
SL - Sludge W - Water		12 0	112 t	70	<u>-</u>		MS	MSD	50	eloulou	00.5		┼				-	\dashv		_	J	<i>)</i>			 	
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L - EP/TCLP Leachate	5			۵	<u> </u>	-0.4-)	+		 4-	*	0959		┼	 	 	 	┼┼		.7			 		 		
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Virtual Laboratories Everywhere

Recra LabNet Philadelphia Analytical Report

W.O.#: 10985-001-001-9999-00

Date Received: 03-30-99

RFW#: 9903L585

SDG/SAF#: H0371/B99-029

METALS CASE NARRATIVE

Client: TNU-HANFORD B99-029

1. This narrative covers the analyses of 4 TCLP leachate samples.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. A ten-fold dilution was performed on all samples due to the sample matrix.
- 3. All analyses were performed within the required holding times.
- 4. The cooler temperature has been recorded on the Chain of Custody.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The TCLP extract from sample B0V3K2 was selected for the matrix spike (MS) for this analytical batch. The MS recovery was greater than 50% as per method criteria. Refer to the Inorganics Accuracy Report.
- 11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor

Vice President

Philadelphia Analytical Laboratory

mld/m03-585

4-19-99

Data

METALS METHOD GLOSSARY

The following met Recra Lot#: 99	thods are used as ref 03L585	erence for the digestion :	and analysis of	samples cont	ained within this
Leaching Procedu	re:13101311	1312Other:	<u>_</u>		
CLP Metals Di	gestion and Analy	sis Methods:ILM03.	0 _ILM04.0		
Metals Digestion I	Methods:3005AOther	3010A3015302 :	0A3050A	305120	0.7 _SS17
	-	Metals Analysis Me	thods	EPA	
	SW846	EPA.	STD MTD	OSWR	USATHAMA
Aluminum	6010 B	200.7			99
Antimony	6010B7041	⁵ 200.7204.2			99
Arsenic	6010B7060	A 5200.7206.2	3113B		99
Barium	6010B	200.7			99
Beryllium	6010 B	200.7			99
Bismuth	6010B ¹	200.7 1		1620	99
Boron	6010B	200.7			99
Cadmium	6010B7131	IA 5200.7213.2			_99
Calcium	6010B	200.7			99
Chromium	∠6010B7191	1 ⁵ 200.7218.2			SS17
Cobalt	6010 B	200.7			99
Copper	6010B721	<u> </u>			_99
lron	6010B	200.7			99
Lead	6010B742		_3113B		99
Lithium	6010B7430			1620	_99
Magnesium	_6010B	200.7			99
Manganese	_6010 B	200.7			_99
Mercury		/1A ³ 245.1 ² 245.5 ²			_99 _00
Molybdenum	6010B	200.7			_99 _00
Nickel	_6010B	_200.7			99
Potassium	_6010B _ 761			1/20	99
Rare Earths	_6010B ¹	200.7 1	2112D	1620	99
Selenium Silicon	6010B		_3113B	1620	99
Silica	6010B	200.7 200.7		1620 1620	99
Silver	6010B 776			1020	
Sodium	6010B 777				
Strontium		200.7 —273.1			<u></u>
Thallium		11 ⁵ 200.7279.2	200 9		<u></u>
Tin	6010B	200.7	200.7		<u></u>
Titanium	0010B 6010B	200.7 200.7			—99
Uranium	6010B ¹	200.7 200.7 ¹		1620	<u></u>
Vanadium	0010B 6010B	200.7 200.7		1020	
Zinc	6010B	<u>200.7</u> 200.7			
Zirconium	6010B ¹	200.7 ¹		1620	— 99
-JII VUIII MILL				1020	

Method:

003

Other:_

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
- 4. Flame AA.
- 5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/19/99

CLIENT: TNU-HANFORD B99-029 RECRA LOT #: 9903L585

WORK ORDER: 10985-001-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIKIT	FACTOR
******	*********	*******************	******	*****		******
-005	BOV3K2	Chromium, TCLP Leachate	4890	UG/L	6.0	10.0
-006	BOV3K4	Chromium, TCLP Leachate	3340	UG/L	6.0	10.0
-007	BOV3K6	Chromium, TCLP Leachate	5050	UG/L	6.0	10.0
-008	BOV3K8	Chromium, TCLP Leachate	3470	UG/L	6.0	10.0

Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B99-029

DATE RECEIVED: 03/30/99

RFW LOT # :9903L585

CLIENT ID	/ANAI	YSIS	RFW	#	MTX 	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V3K2									
TCLP	,		.001	·	so	99LT0035	03/24/99	03/31/99	04/01/99
BOV3K4									,
TCLP			002		so	99LT0035	03/24/99	03/31/99	04/01/99
BOV3K6									
TCLP			003		so	99LT0035	03/24/99	03/31/99	04/01/99
B0V3K8						v			
TCLP			004		so	99110035	03/24/99	03/31/99	04/01/99
B0V3K2		÷							
CHROMIUM,			005		W	9910204	04/01/99	04/03/99	04/06/99
CHROMIUM, CHROMIUM,				REP MS	W	99L0204 99L0204	04/01/99 04/01/99	04/03/99 04/03/99	04/06/99 04/06/99
BOV3K4									
CHROMIUM,	TCLP	LEACH	006	;	W	9910204	04/01/99	04/03/99	04/06/99
BOV3K6									
CHROMIUM,	TCLP	LEACH	007	,	W	9910204	04/01/99	04/03/99	04/06/99
B0V3K8								en de la companya de La companya de la co	
CHROMIUM,	TCLP	LEACH	001	3	W	9910204	04/01/99	04/03/99	04/06/99
LAB QC:			• :						
CHROMIUM	LABOR	ATORY	LC	1 BS	M	9910204	N/A	04/03/99	04/06/99

Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B99-029

DATE RECEIVED: 03/30/99

RFW LOT # :9903L585

CLIENT ID /ANALYSIS	RFW #	мтх	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						
CHROMIUM, TCLP LEACH	MB1	W	9910204	N/A	04/03/99	04/06/99
CHROMIUM, TCLP LEACH	MB2	W	99L0204	N/A	04/03/99 _	04/06/99

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request Page | of]

99031585

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



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CODES:	Lab					QC Chose		Matrix .	Date	Time					ľ			2	1	2 2			1						
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SO - Solid SL - Sludge						MS M	ISD										Ź	2	2										
W - Water O - Oil	001	BOV3	Ka					50	42499	0915									<u> </u>	/ /									
A - Air DS - Drum	12	1	4						1 1	0929									<u> </u>	/ /									
Solids DL - Drum	3		<u></u>							0943										/									
Liquids L - EP/TCLP	4		8					+	1	0959										/ /									
Leachate Wi - Wipe	5)			w	*	-								V													
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					A										mbient or	Chilled	Pack	rage Y	/)or N po Sample										
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